

# Water Pump

Course/Grade Level:9-12

Experiment Duration:30 minutes

Website Link to Experiment:

[Water Pumps | Rowan Research | Rowan University](#)

Expectations:

Construct a set of connected bottles, visualize water moving to equilibrium, and watch the water stop flowing when the water level is equal. Then answer questions showing understanding.

Sample Data/Tables if Needed:

## Context for Learning

Objective:

Demonstrate the concept of fluid pressure and how it causes the flow of fluids.

How this experiment relates to wastewater/water treatment:

In water treatment, the water is often moved from one location to another using a network of pipes, and the principles of fluid pressure and flow are important for understanding the behavior of water in the system.

## Instructional Delivery

Materials:

1. Two plastic bottles of the same size and shape
2. A plastic tube or a straw
3. Water
4. Food coloring (optional, for visual effect)
5. Tape or clay (optional, for securing the tube or straw in place)

Procedures:

1. Take two plastic bottles of the same size and shape and clean them thoroughly.
2. Fill one of the bottles with water and add some food coloring if desired.
3. Connect the two bottles by inserting a plastic tube or straw through the bottom of each bottle. The tube or straw should be long enough to connect the two bottles while still leaving some space for the water to flow through.
4. Secure the tube or straw in place using tape or clay, making sure that it is watertight to prevent leaks.
5. Place the bottles at different heights.
6. Slowly pour water into the higher bottle and observe what happens. Water should flow through the tube or straw and into the lower bottle.
7. Wait until the water flow stops, and then observe that the water level is now the same in both bottles.

## Assessment/Evaluation

Questions:

1. What is the purpose of the experiment?
2. How does the pressure of water cause it to flow from the higher bottle to the lower bottle?
3. What happens when the water levels in the two bottles are equal? Why does this happen?
4. How does the diameter or length of the connecting tube affect the flow rate of water?
5. What factors could influence the speed of the water flow between the bottles?
6. How might the principles demonstrated in this experiment relate to real-world applications, such as water treatment or plumbing?
7. Where could you find a water pump near you?
8. Come up with a way you could expand on this experiment?

Notes: